Remarks

The Applicants have amended Tables 1 and 2 of the specification to correct minor typographical errors. In particular, one of the columns of Table 1 has been amended to add a percentage sign. Units for two of the columns in Table 2 have also been amended for units. The Applicants enclose a copy of the page 11 from the priority document that shows the units in the correct locations. Entry into the Official File is respectfully requested.

The Applicants have amended Claims 1, 12, and 13. The amendment to Claim 1 includes inclusion of a subject matter of Claims 2 and 3 into that claim. (Claims 2 and 3 have accordingly been cancelled.) Claim 1 has further been amended to change the surface resistivity to being no greater than 10^8 Ω/□. Support may be found in the Applicants' specification on page 2 at line 22, for example. Claim 1 has still further been amended to recite that the thickness of the polyimide film is 7.5-125 μm. Support may be found on page 4 at lines 22-23, for example. Finally, Claim 1 now includes the thickness of the metal oxide and conductive ultrafine particle mixed layer being 0.05-0.15 μm. Support may be found on page 5 at lines 15-17 and page 10 at lines 24-25. Similar amendments have been made to independent Claims 12 and 13. (Claims 14 and 15 have accordingly been cancelled.)

The Applicants have added new Claims 22- 24. They depend from Claims 1, 12 and 13, respectively and recite that the surface resistivity is 10^4 -10^8 Ω/□. Support may be found on page 8 at line 23, for example. Entry of the above amendments and new claims into the Official File is respectfully requested.

The Applicants acknowledge the rejection of Claims 1, 3-6, 8-13, 15-18, 20 and 21 under 35 U.S.C. §102 over Schlueter. The Applicants respectfully submit that the above amendments render the entire rejection moot. Withdrawal of the rejection is accordingly respectfully requested.

The Applicants acknowledge the rejection of Claims 2, 7, 14 and 19 under 35 U.S.C. §103 over Schlueter. The Applicants respectfully submit that cancellation of Claims 2 and 14 renders that portion of the amendment as being moot. The Applicants respectfully submit that Claims 7 and 19 are allowable inasmuch as those claims contain additional characteristics not taught or suggested by Schlueter. In that regard, the Applicants note with appreciation the Examiner's frank acknowledgement that Schlueter does not teach that the indium tin oxide particles have a particle size of no greater than 0.1 μm. This is an important deficiency. Moreover, the Applicants

respectfully submit that there is nothing in Schlueter that would cause one of ordinary skill in the art to attempt to "optimize the size" and amount of the metal oxide in indium tin oxide particles. Although Schlueter may suggest that the desired resistivity can be obtained by varying the concentration of the conductive fillers, there is utterly nothing that teaches or suggests that surface resistivity would or could be modified by changing the size of the particles. Further, there is even less a motivation to change the size of the particles inasmuch as the various Tables in column 13 of Schlueter indicate that particle size is essentially unimportant. Those particle sizes vary from 0.7 μm – 10 μm with no apparent importance at all. In any event, this is sharply contrasted to the particles of Claim 7 and 19 that have a particle size of no greater than 0.1 μm. That maximum size is fully seven times less than the minimum disclosed particle size of the Schlueter tables and is a hundred times less than the mean particle size of the largest of those particles. Accordingly, the Applicants respectfully submit that Schlueter provides utterly no disclosure that would cause one of ordinary skill in the art to make the hypothetical modifications as applied to Claims 7 and 19. Withdrawal of the rejection of Claims 7 and 19 is respectfully requested.

Before addressing the issue of other claims now containing the subject matter of Claims 2-3 and 14-15, the Applicants would like to acknowledge the Examiner's helpful and detailed comments concerning the alleged applicability of Schlueter to selected ones of the claims. In that regard, the Applicants believe that a brief review of the disclosure of Schlueter is in order. Schlueter essentially discloses three different embodiments as shown in Figs. 3, 4 and 5 of the Schlueter drawings. The first embodiment is a single-layer embodiment shown in Fig. 3 which has a surface resistivity from about 10^4 to about 10^{12} Ω/□ and a thickness from about 25 to about 150 μm. That single layer is comprised of a polyimide filled with a conductive filler as shown by reference numbers 30 and 31. The second embodiment is a two-layer configuration shown in Fig. 4 which is comprised of substantially the same layer of materials as shown in Fig. 3 with an additional outer layer comprised of a low surface energy and high temperature resistant material such silicone rubbers, fluoropolymers, urethanes and the like. Thus, the embodiment shown in Fig. 4 contains a base layer of polyimide and filler with an outer layer of a rubber material.

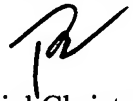
Fig. 5 shows the third embodiment which is essentially the same as the two-layer embodiment layer shown in Fig. 4 except that it contains an additional outer-release layer which becomes the silicon rubber layer and the intermediate layer is a fluoroelastomer.

All three of these configurations are different from what the Applicants have done. The Applicants claim a supporting film that does not necessarily have any type of filler. However, the layer formed on the service of the film is comprised of a metal oxide and conductive ultrafine particles. Schlueter fails to teach or suggest this. Nonetheless, there are important differences between these two basic approaches. As noted above, Schlueter discloses a polyimide film substrate within which a metal oxide filler is dispersed. However, in that case, since the high sheer properties inherent to the polyimide film are drastically decreased if the filler is added in a large amount, the filler can only be added in a limited amount. Therefore, in all the examples, the obtained film merely has a resistivity of approximately 10^4 to 10^{14} Ω/□. This is sharply contrasted to the subject matter of independent Claims 1, 12 and 13, for example, wherein the conductive mixed thin layer is formed onto a film containing no additive or onto a film without the need for an additive. It is therefore possible to provide excellent antistatic properties of 10^5 to 10^6 Ω/□ for the resulting film. Therefore, the Applicants respectfully submit that Schlueter is inapplicable.

Further, there is no disclosure in Schlueter concerning the metal oxide in conductive ultrafine particle mixed layer having a thickness of 0.05-0.15 μm. In sharp contrast, the two-layer embodiment of Schlueter discloses that the outer layer has a thickness of from about 25 to about 5,000 μm. This is nowhere remotely suggestive of a thickness of 0.05-0.15 μm. Similarly, in the three-layer embodiment, the outer layer has a thickness of from about 5 to about 75 μm which again is not evenly remotely suggestive of the claimed thickness of 0.05-0.15 μm.

In light of the foregoing, the Applicants respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,



T. Daniel Christenbury
Reg. No. 31,750
Attorney for Applicants

TDC:vbm
(215) 656-3381

金属化合物およびＩＴＯ超微粒子分散混合物の調製およびフィルムについての評価結果をまとめて表1、表２に示す。また帯電防止芳香族ポリイミドフィルムの光線透過率を図１に示す。

【００３３】

比較例１

ＡＬＣＨを用いなかった他は、実施例１と同様に実施した。得られた帯電防止ポリイミドフィルムのＩＴＯ超微粒子層は、透明性を有していた。

超微粒子分散混合物の調製およびフィルムについての評価結果をまとめて表１、表２に示す。

【００３４】

実施例１～３で得られたポリイミドフィルムは、比較例１で得られたポリイミドフィルムと同等の機械特性および光透過性を有していることが確認された。

【００３５】

【表１】

	導電性超微粒子溶液 (g)	導電性超微粒子含有量 (g)	ALCH (g)	Al／導電性超微粒子の重量比 (%)	DMAc (g)
実施例1	1.00	0.10	0.05	4.9	1.00
実施例2	1.00	0.10	0.05	4.9	2.00
実施例3	1.00	0.10	0.07	6.9	1.00
比較例1	1.00	0.10	0	0	0.96

【００３６】

【表２】

	表面抵抗値 Ω／□	剥離試験後の表面抵抗値 Ω／□	表面保持性の評価
実施例1	6.3×10^{4}	1.0×10^{5}	○
実施例2	3.2×10^{6}	5.0×10^{6}	○
実施例3	6.3×10^{5}	1.6×10^{6}	○
比較例1	6.3×10^{9}	1.0×10^{8}	×

【００３７】

【発明の効果】

この発明によれば、以上のような構成を有しているため、次のような効果を奏